

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Kwang-ki Choi et al.

Application No.: 10/823,653

Filed: April 14, 2004

For: SEMICONDUCTOR LASER
DEVICE



MAIL STOP APPEAL BRIEF-
PATENTS

Group Art Unit: 2828

Examiner: ARMANDO RODRIGUEZ

Confirmation No.: 4964

REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer of February 25, 2008. For sake of brevity, Appellants will focus on the Examiner's new arguments beginning at page 4 of the Examiner's Answer.

The Examiner identifies a "front corner" and a "back corner" on the marked-up drawing appearing on reproduced Figure 4 of Nakamura et al., and referred to in the Examiner's comments at page 4. First, it should be noted that the illustration is likely of a cutaway view, rather than a view of an actual device. Second, even if one were to assume *arguendo* that what was shown in Figure 1 is a depiction of the actual device as a discrete structural entity (rather than a cutaway view), it would not, repeat not, have a front and back corner that is curved. The corners that could be referred to as front and back refer to the 90° transition from the trench wall to the alleged side surface of the device. This is not a rounded corner. It is a square corner as illustrated. This understanding is not contradicted, at least to the reading of the undersigned, by any passage in the primary reference, Nakamura et al.

Hence, Nakamura does not have "corners" connected to the substrate, as previously argued in Appellant's Reply.

Third, Applicants respectfully note that the claims are not simply referring to "rounded corners." The claims, as appears on the Claim Appendix of the Appeal Brief, refers to a semiconductor laser device which includes a multi-semiconductor material layered mesa structure on a substrate and, *inter alia*, rounded corners connected to the substrate, in a lower portion on the mesa structure. Applicants respectfully point out that the structure relied upon by the Examiner in Nakamura et al. is simply residing next to an isolation trench, would not normally be referred to as a "mesa structure" in the art. More importantly, however, is to the degree one views the isolation trench 32 walls of Nakamura et al. as being "rounded" it should be noted that these are within or inside this substrate and therefore not connected to the substrate particularly at a lower portion of a mesa structure. These features can be found in independent claims 1 and 9.

In addition, claim 9 specifically refers to the rounded corners as being configured to prevent concentration of a scribing force. This is clearly not met by Nakamura since the scribing force would be evenly distributed by the various structures that are coplanar with the top of the device.

At page 5, the Examiner identifies four arguments that he perceived to be present in the Appeal Brief. Specifically, the Examiner identifies:

The appellant finally argues, the invention of claim 1 and 9 are not anticipated by the applied art because (1) the applied art does not appreciate the problem identified in the present application, (2) does not suggest that rounded corners provide a solution to any problem, such as preventing concentration of a scribing force, (3) no supporting disclosure suggesting that the curve in the line at the corner was intentional or actually apparent in the

device as designed or made, (4) that the present claims require the corner to be "rounded", which would exclude minor transitional gradients due to etching tolerances.

With respect to identified argument 1, Applicants note that the applied art does not appreciate the problem identified in the present application. Applicants respectfully submit that there is no anticipation to the claims and the Examiner is right that this was not particularly relevant to that argument. Applicants presented it as an illustration as to why the lack of anticipation should be apparent, and inferentially that an obviousness rejection is not appropriate either.

With respect to argument 2, the Examiner suggests that Appellants argue that the rounded corners do not provide a solution to any problem. The Office identifies the problem being solved as "isolation". However, a square bottom trench would provide isolation. It is the break in the layers that provides isolation, not the configuration of the sidewalls of the trench. The point is that the illustrated trench cross-section may have been a drafting choice, but does not appear to have been a deliberate aspect of Nakamura et al's alleged invention. Applicants are arguing that the drawing should not be relied upon unless there is some reason to believe that the particular choice in styles of lines used by the draftsman makes some sense or can be understood to be deliberate for illustrating the invention. There are other arguments presented above that do not rely on such speculation, and it is respectfully submitted that neither the Appellants nor the Examiner should rest its position on the discretion of a draftsman in illustrating a device in a patent application.

As to argument 3, again, Applicants respectfully submit that the illustrated profile of the trench might have been a drafting expedient, and not a deliberate

disclosure of any aspects of the Nakamura et al. structure, given the complete silence as to the alleged rounded corner structure in the written specification.

Applicants are not clear as to the Examiner's position regarding argument 4, which was identified as the claims referring to "rounded corners" which would exclude minor transitional gradients due to etching tolerances. The Office suggests that the claims are limited to the structure recited not to any particular process. But this is not the Appellants' point. The processing tolerances might result in less than perfectly perpendicular transition between the substrate and a mesa (which is not present in the applied art since the trench is embodied in the substrate), but just as Applicants are free to recite that a layer is "conductive" when it has a resistance that suggests that it is at least partially insulating, but nevertheless did not have to fear reading such a conductive layer on an insulating layer, the same is true here. Claims are to be read as they would be understood by those skilled in the art. The recitation of "rounded corners" clearly indicates that tolerances due to processing are not what is encompassed by the recitation, but rather a deliberate rounding of corners that is beyond mere tolerances of whatever process is being utilized or choosing a process that would result in a rounded corner that exceeds the tolerances of the normal processes.

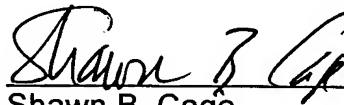
It is hoped with the foregoing clarifying remarks, the Board will understand Appellants' arguments, be able to identify the deficiencies of the rejection, and overturn the Examiner's decision.

Respectfully submitted,

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